

DOCKET: BUR920030170US1

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

INVENTOR: Emily F. Gallagher et al.

) EXAMINER: Audrey Y. Chang

SERIAL NO.: 10/709,326

) ART UNIT: 2872

FILING DATE: April 28, 2004

) DATE: February 27, 2006

FOR: MONOLITHIC HARD  
PELLICLE

)

**REASONS FOR PRE-APPEAL REQUEST FOR REVIEW**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**CERTIFICATE OF MAILING**

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Name: Carol M. Thomas Date: February 27, 2006

Signature: *Carol M. Thomas*

Dear Sir:

Applicants are submitting these remarks to accompany their Notice of Appeal and Pre-Appeal Brief Request for Review.

The present application is directed to a monolithic optical pellicle, and method of forming the same, that is a one-piece monolithic structure that comprises a transparent plate having a recessed portion entirely surrounded by a perimeter frame. The invention is also directed to methods of protecting a photomask by attaching the present one-piece monolithic optical pellicle thereto such photomask.

**Omission of Essential Elements Needed for a Prima Facie 35 USC § 103 Rejection**

Claims 1-3, 6, 9, 11-17, 30 and 31-34 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (U. S. Patent No. 6,744,562) (hereinafter "Okada") in view of Nistler et al. (U. S. Patent No. 6,410,191) (hereinafter "Nistler"). Claims 18 and 20-29 also

stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over Okada in view of the patent issued to Nistler. Applicants respectfully traverse these rejections and request review on the grounds that the Examiner's citation of the prior art lacks essential elements to establish a *prima facie* rejection for obviousness.

As recited in independent claim 1, applicants' invention is directed to an optical pellicle that comprises a transparent plate having a first thickness surrounded by a perimeter having a second thickness ranging from about 3mm to about 6mm. The perimeter entirely surrounds the recessed portion such that the transparent plate is a monolithic optical pellicle. A plurality of openings traverse through the perimeter for introducing a gas flow over the recessed portion upon mounting the monolithic optical pellicle to a photomask. Independent claim 18 is directed to a method of forming the optical pellicle of claim 1.

Applicants' invention is also directed to a method of protecting a photomask during photolithography by providing a photomask and attaching a monolithic one-piece optical pellicle having a recessed portion with a thickness ranging from about 200 $\mu$ m to about 900 $\mu$ m and a frame with a thickness ranging from about 3mm to about 6mm to the photomask, as is recited in independent claim 30, from which claims 33 and 34 depend. The monolithic one-piece optical pellicle protects the photomask during subsequent photolithography processing.

Applicants agree with the Examiner that Okada is limited to a pellicle frame and pellicle sheet that are not made of a monolithic single piece pellicle. That is, Okada only discloses a two-piece pellicle having a box-shaped pellicle frame with top and bottom openings bonded to a pellicle sheet to cover one of the openings of the pellicle frame. (Abstract, col. 2, ll. 45-55 and col. 3, ll. 16-22.) As such, the Okada patent fails to disclose a critical element of the claimed

invention, and is merely a typical example of the prior art at which the applicants' invention is aimed at overcoming the problems associated therewith.

To overcome the deficiencies of Okada, the Examiner cites Nistler stating that it is in the same field of endeavor and teaches a method for making a "monolithic pellicle-like optical element" having a perimeter of a transparent plate entirely surrounding a recessed portion. Applicants disagree.

Nistler is limited to forming photomasks (Abstract) --not an optical pellicle. It discloses forming phase-shift masks (20, 100) by forming trenches (22, 115) in a photo-mask substrate (12, 105). The trenches have edges that define line pattern features. This is done by depositing chromium patterning layers (24, 32, 110) on the substrate, and then etching vertical trenches (22, 115) into the photo-mask substrate using conventional etching procedures. (Col. 1, l. 13 to col. 2, l. 3; col. 4, ll. 11-55 and Figs. 1A, 1C, 2, 3 and 4.) Nistler does not disclose or contemplate forming an optical pellicle for protecting such photomask, and as such, does not disclose or contemplate a one-piece monolithic optical pellicle.

As expressed in the Final Rejection, it is the Examiner's position that it is "within the general skill of a worker in the art and it would have been obvious to one skilled in the art to adopt the teachings of Nistler to modify the pellicle of Okada to make the pellicle frame and pellicle sheet in a single monolithic piece . . . for the benefit of making the optical pellicle into a seamless single body so that no possible cracks or defects would result when the optical pellicle is used in high heat/energy photolithographic process." Applicants disagree.

Applicants submit that by taking the combined teachings of Okada and Nistler, it would not have been obvious to one skilled in the art to adopt the teachings of Nistler to modify the pellicle of Okada to make a pellicle frame and pellicle sheet in a single monolithic piece. Since

Okada is directed to a two-piece pellicle, and Nistler is directed to forming photomasks using conventional etching techniques, there is clearly no explicit teaching, suggestion or motivation within these references, alone or in combination, that would render obvious applicant's invention of a one-piece monolithic optical pellicle. The record is also void of sufficient evidence to support a finding of obviousness based on implied teachings. Since the record is void of any explicit and/or implicit teachings within the cited references, applicants submit that there is also no reasonable expectation of success that a skilled artisan would be lead to applicants' invention over the teachings of Okada in view of Nistler.

In the Examiner's finding of obviousness, the Examiner's line of reasoning of obviousness is that the present monolithic optical pellicle would have been obvious to an artisan in light of the teachings of the references due to the benefit of making an optical pellicle into a seamless single body so that no possible cracks or default would result when the optical pellicle is used in high heat/energy photolithographic process. However, applicants submit that the Examiner is asserting this line of reasoning based on applicants' own disclosure, not in light of the teachings of the references.

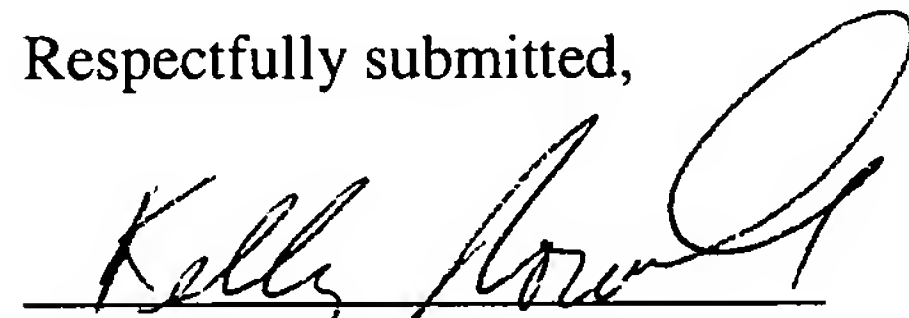
As recited in the present application, applicants' invention is directed at overcoming the problems associated with conventional two-piece optical pellicles that "typically result in small distortions or stresses that can have various effects on the pellicle itself as well as the photomask being protected by such pellicle. For instance, when distortions or stresses occur as a result of attaching a frame to a mask substrate to form a hard pellicle, these distortions and/or stresses are transferred to the hard pellicle, which in turn, create optical distortions or aberrations that distort the projected light during wafer exposure. Further, such stresses may undesirably distort the reticle or even cause stress-induced birefringence or double refraction, i.e., splitting of a light

wave into two unequally reflected or transmitted waves, which may result in problems with wafer printing.” (Specification, *Background* section.) It is submitted that the Examiner is using the teaching of applicants’ application, without any support in either Okada or Nistler, to conclude in hindsight that applicants’ monolithic optical pellicle, and method of making the same, is obvious. This, of course, is an improper finding of obviousness based on hindsight of the present invention.

It is for these reasons that applicants submit that the Examiner has not established a *prima facie* case of obviousness over Okada in view of Nistler. Neither patent, alone or in combination, discloses, contemplates or suggests forming a one-piece monolithic optical pellicle, the resultant one-piece monolithic optical pellicle, and its use for attachment to a photomask for the protection of such photomask during lithographic processing as is currently claimed.

Applicants submit that the application is in a condition where allowance of the entire case is proper. Reconsideration and issuance of a notice of allowance are respectfully solicited.

Respectfully submitted,



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Doc Code: AP.PRE.REQ

PTO/SB/33 (07-05)

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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional)	
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		10/709,326	April 28, 2004
		First Named Inventor	
		Emily F. Gallagher et al.	
		Art Unit	Examiner
		2872	Audry Y. Chang
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record.      47,898 Registration number _____</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____</p> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p>			
<p><input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.</p>			

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